Tooele Chemical Agent Disposal Facility (TOCDF)

Request for a

CLASS 2 MODIFICATION

to the

TOCDF RCRA Permit

Request Number:	TOCDF-MPF2WT-02-1002
Request Title:	Two Waste Types in Metal Parts Furnace (MPF)
EPA ID Number:	UT 5210090002

For the:

STATE OF UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ)

Division of Solid and Hazardous Waste (DSHW)

1460 WEST 288 NORTH
P. O. BOX 144880
SALT LAKE CITY, UT 84114-4880

TABLE OF CONTENTS

Section **Page No.**

1. DESCRIPTION OF CHANGE

The TOCDF Metal Parts Furnace (MPF) is used to process Mustard Ton Containers (TCs), 155mm H Projectiles, and 4.2-inch Mortars. The TOCDF RCRA Permit refers to these items as "Chemical Agent Munitions". The MPF is also used to process Secondary Waste and Miscellaneous Waste. Miscellaneous waste is a subset of Secondary Waste that may be fed to the MPF at reduced charge weights and charge intervals relative to Secondary Waste. The TOCDF RCRA Permit refers to these types of waste as "Agent Contaminated Secondary Waste".

The TOCDF RCRA Permit currently prohibits Secondary Waste from being in the MPF Primary Combustion Chamber (PCC) at the same time as wastes categorized as chemical agent munitions are in the PCC. The applicable Permit Conditions reads:

V.C.1.a.vi. The wastes identified in V.C.1.a.ii shall not be inside the MPF at the same time the wastes identified in V.C.1.a.i are inside the MPF.

Note Permit Condition V.C.1.a.ii refers to Agent Contaminated Secondary Waste; Permit Condition V.C.1.a.i refers to Chemical Agent Munitions.

Wastes processed through the MPF are placed on trays; these trays are moved using a conveyor system. The conveyor system also traverses the length of the MPF PCC. Upon exiting the MPF PCC, trays containing treated waste are transferred to the MPF Discharge Airlock (DAL) where they are held until the interior of the DAL is monitored for agent via an Automatic Continuous Air Monitoring System (ACAMS). If the monitoring results show no agent is detected the waste trays are transferred out of the DAL to the Cool-Down Conveyor. The DAL is under Engineering Controls and vents to the MPF Afterburner. The Cool-Down Conveyor is not under Engineering Controls.

Attachment 22 of the TOCDF RCRA Permit (Agent Monitoring Plan) requires waste trays to be returned to the MPF PCC from the DAL if the ACAMS alarms while DAL agent monitoring is being conducted. The applicable Attachment 22 paragraph reads:

22.32.3 During monitoring, if the ACAMS alarms, the item is moved back into Zone 3 for additional processing time for a minimum of 15 minutes.

Currently, when transitioning from the processing of Secondary Waste to chemical munitions, the first tray of munitions is not fed to the MPF until the tray of Secondary Waste has exited the DAL and transferred to the Cool-Down Conveyor. When transitioning from munitions to Secondary Waste, the first tray of Secondary Waste is not fed to the MPF until the tray of munitions has exited the DAL and transferred to the Cool-Down Conveyor. This is done as a contingency to ensure compliance with the Permit Condition prohibiting two different types of waste (i.e., Secondary Waste and munitions or TCs) from being in the PCC at the same time. If TOCDF were to feed a tray of waste while a tray containing a different type of waste was in the

DAL and if the tray of waste in the DAL was required to be moved back to Zone 3 of the MPF PCC because of a DAL ACAMS alarm (as required by Attachment 22, paragraph 22.32.3), then TOCDF would not be in compliance with Permit Condition V.C.1.a.vi.

During the Mustard Campaign the MPF has become the most utilized incinerator of the four TOCDF incinerators. Because of the inability to completely drain the Mustard filled ton containers (TCs) and munitions, these items are required to be fed to the MPF having heel weights that require additional MPF processing time. In addition the desire to conform to rigorous waste management principles directs TOCDF to process Secondary Waste as it is generated and when there is no inventory of Secondary Waste in the Munitions Demilitarization Building (MDB) to process, Secondary Waste that has been placed into permitted hazardous waste storage is processed. The latter is done to prevent the need to treat large inventories of Secondary Waste at the end of munitions processing, which would delay the start of facility closure activities.

One of the limiting factors in the amount of MPF operational time devoted to the processing of Secondary Waste is the time it takes to transition from processing chemical munitions to Secondary Waste caused by the existing permit limitation prohibiting two different types of waste being in the MPF PCC at the same time. For example, when TOCDF transitions from processing L6 TCs to Secondary Waste a minimum of 143 minutes are added to the transition time to ensure that two different types of waste will not be in the MPF PCC due to the remote possibility that the DAL ACAMS will alarm and the tray of waste residing in the DAL will have to be moved back into Zone 3 of the MPF PCC.

If this transition time and associated impact to MPF utilization could be lessened (the MPF is empty and not processing anything during these transition times) TOCDF would be able to process more Secondary Waste thus eliminating or minimizing the amount of Secondary Wastes requiring treatment prior to the beginning of closure activities. One way to increase MPF utilization is to revise the permit condition prohibiting two different types of wastes from being in the MPF PCC at the same time so it is not applicable for specific situations where it provides no additional protection to the environment.

This permit modification proposes to:

Add a condition to the TOCDF RCRA Permit which, if approved, would allow a waste tray of Chemical Agent Munitions (see Permit Condition V.C.1.a.i.) and a tray of Agent Contaminated Secondary Waste (see Permit Condition V.C.1.a.ii.) to be in the MPF Primary Combustion Chamber (PCC) at the same time provided one of the trays of waste had previously been processed through the MPF PCC at the required zone times and temperatures and been returned from the Discharge Airlock to the PCC because of a DAL ACAMS alarm.

REGULATORY BASIS AND CLASSIFICATION

This proposed change to the TOCDF RCRA Permit is classified as a Class 2 modification request per 40 CFR 270.42 Appendix I L.5.c. which reads:

Modification of any other operating condition or any inspection or recordkeeping requirement specified in the permit

2. JUSTIFICATION FOR CHANGE

DISCUSSION

Upon completion of thermal treatment in the MPF PCC trays of waste are transferred from Zone 3 of the PCC to the MPF DAL. There the treated tray of waste remains until it is monitored for agent by an ACAMS. If DAL agent monitoring event results in an ACAMS alarm, TOCDF is required by paragraph 22.32.3 of Attachment 22 of the RCRA Permit to return the treated tray of wastes to Zone 3 of the MPF PCC for an additional 15 minutes.

In order to ensure compliance with this requirement and the requirements of existing Permit Condition V.C.1.a.vi, which prohibits Secondary Waste and Agent Munition Waste from being in the MPF PCC at the same time, when transitioning from the processing of different types of waste TOCDF is also required to delay the feeding of the first "transitional" tray of waste to the MPF PCC until the last tray that held a different type of waste exits the DAL.

The possibility of having to transfer a tray of treated waste from the DAL back to Zone 3 of the MPF PCC is always present, and it is prudent to return a tray of treated waste to the PCC if when monitored for agent in the DAL an ACAMS alarm is activated. However, no additional protection to the environment is provided by the "blanket" prohibition of having two different waste types in the MPF PCC at the same time without an exemption for waste trays which have undergone treatment and have exited the PCC, but were returned to the PCC due to a DAL ACAMS alarm. Consider:

- For the Chemical Agent Munitions, TOCDF performs MPF Agent Trial Burns (ATBs) during which the MPF PCC zone times and temperature that result in successful and complete treatment of agent munition types is demonstrated.

- For Secondary Waste, TOCDF is required to conduct a function test for each desired waste load configuration. The successful treatment of each waste load configuration is demonstrated to Utah Division of Solid and Hazardous Waste (DSHW) representatives.

- The MPF is designed and operated as a counter current incinerator meaning waste trays progress through the PCC in the opposite direction as the combustion gases. Zone 1 of the MPF always contains the waste with the most agent contamination; Zone 3 the least. The PCC exhaust duct is located directly over Zone 1. The flow of waste through the MPF PCC is from Zone 1 to Zone 2 to Zone 3. The flow of combustion gases through the MPF is from Zone 3 to Zone 2, from Zone 2 to Zone 1, and from Zone 1 to the Afterburner. Treated wastes in Zone 3 are therefore not contacted by contaminated combustion gases evolving off of burning wastes residing in Zones 1 or 2.

- There is a loss of available MPF operational time each waste type transition. Each time

TOCDF transitions from the processing of agent munitions to Secondary Waste TOCDF looses up to two and a half hours of available operational time waiting for the waste tray in the DAL to clear (see Table 1 below). The loss of this processing time does not provide any additional protection to human health and the environment because there is no detrimental environmental consequence to having two trays of dissimilar waste in the MPF PCC at the same time; particularly when one of the trays of waste has essentially completed treatment based on the results of the ATBs and Function Tests.

Table 1. MPF Waste Type Transition Times

	Zone 1 (min)	Zone 2 (min)	Zone 3 (min)	DAL (min)	Current Transition Time (min)	Transition Time Resulting from Permit Mod (min)
L2 TCs	85	10	100	100	310	210
L4 TCs	105	10	120	120	370	250
L6 TCs	123	15	143	143	439	296
4.2 HT Mortars	35	5	20	17	92	75
Secondary Waste	75	25	50	96*	261	165

*Typical time to reach DAL Low Temperature Monitoring conditions which are required for Secondary Waste.

- The majority of MPF DAL ACAMS alarms are non-confirmed. Since the beginning of the Mustard Campaign there has been 57 MPF DAL alarms, of which only one was confirmed by Depot Area Air Monitoring System (DAAMS) absorption tube analysis. Note this confirmed alarm did not result in an agent release to the environment since the waste tray that was in the DAL at the time of the alarm was transferred back into Zone 3 of MPF PCC for an minimum of an additional 15 minutes and then back to the DAL where it underwent successful DAL agent monitoring before being released outside of engineering controls to the Cool-down Conveyor.

- A tray of waste returned to MPF PCC is held in Zone 3 for minimum of 15 minutes as required by paragraph 22.32.3 of Attachment 22. The tray is then transferred to the DAL where it undergoes agent monitoring for a second time before it is released from the DAL to the Cool-down Conveyor. Therefore, regardless of the temperatures the tray is exposed to in the MPF, the results of the second iteration of DAL agent monitoring assure a release of agent to the environment does not occur. Should a DAL ACAMS alarm occur again, the tray would once again be returned to Zone 3 of the MPF PCC.

PROPOSED PERMIT CONDITION

The proposed permit condition reads as follows:

Conditions V.C.1.a.vi, V.C.2.e, V.C.2.e.i, V.C.2.f, V.C.2.f.i, V.C.2.h, and V.C.2.h.i are not applicable to the associated waste identified in V.C.1.a.ii or V.C.1.a.i only if the waste has completed one treatment cycle through the MPF Primary Combustion Chamber (at the Permi-specified zone and Discharge Airlock times and temperatures), and was returned to Zone 3 of the combustion chamber due to a Discharge Airlock ACAMS alarm.

The proposed condition references the following Permit Conditions.

V.C.1.a.vi. The wastes identified in V.C.1.a.ii. shall not be inside the MPF at the same time the wastes identified in V.C.1.a.i. are inside the MPF.

V.C.2.e. While processing mustard munitions and ton containers, the temperature of the primary chamber shall be maintained above 1,171°F* in Zone 1, 1,318°F*in Zone 2 and 1,321°F* in Zone 3, and each zone shall not exceed 1,800*° F.

V.C.2.e.i While processing secondary waste the temperature of the primary chamber shall be maintained above 1,415°F* for Zone 1, 1,439°F* for Zone 2 and 1438°F* for Zone 3 and each zone temperature shall not exceed 1800°F.

V.C.2.f. While processing mustard munitions and ton containers, the MPF afterburner temperature shall be maintained above 1,976*° F over a one-hour rolling average and shall not exceed 2,175*° F.

V.C.2.f.i While processing secondary waste the MPF afterburner temperature shall be maintained at or above 2000°F* over a one-hour rolling average and shall not exceed 2,175°F.

V.C.2.h. While processing mustard munitions and ton containers, the MPF exhaust gas flow rate, or unit production rate (as measured by the V-Cone), shall not exceed 8,960* standard cubic feet per minute, over an one-hour rolling average.

V.c.2.h.i While processing secondary waste the MPF exhaust gas flow rate, or unit production rate (as measured by the V-Cone), shall not exceed 7,710* standard cubic feet per minute, over a one-hour rolling average.

V.C.1.a.ii This section of the TOCDF RCRA Permit regulates the treatment of "Agent Contaminated Secondary Waste".

V.C.1.a.i This section of the TOCDF RCRA Permit regulates the treatment of "Chemical Agent Munitions".

Permit Conditions V.C.1.a.vi, V.C.2.e, V.C.2.e.i, V.C.2.f, V.C.2.f.i, V.C.2.h, and V.C.2.h.i specify the Operating Parameter Limits (OPLs) specific to the processing of chemical munitions and Secondary Waste. The process control code sets the applicable MPF Operating Parameter Limits (OPLs) based on the type waste being charged to Zone 1 of the MPF. There is no detrimental environmental consequence to exempting trays of previously treated waste from

complying with the waste type specific OPLs for the 15 minutes the tray of waste will be in Zone 3 of the MPF PCC. This is because the waste tray being returned to the MPF PCC has essentially been treated; the results of the Secondary Waste Function Tests and the ATBs support this conclusion.

IMPACT TO THE TOCDF

If approved this permit modification will have positive impacts to TOCDF MPF operations

Environmental Impacts

There are positive impacts associated with this permit modification in that TOCDF will be better able to manage the timely treatment of Secondary Waste since the loss of productive MPF operational time associated with waste type transitions is minimized.

TOCDF Personnel Impacts

There will be no impact to TOCDF personnel should this permit modification request be approved. Trays of waste causing a DAL ACAMS alarm will still be returned to the Zone 3 of the MPF PCC and will undergo an additional 15 minutes of PCC time and will be monitored in the DAL for a second time unless the DAAMS results are available which show the DAL ACAMS alarm to be a false-positive alarm. If the DAL ACAMS alarm is shown to be a false-positive alarm then the affected tray of waste may be released from the DAL to the Cool-Down Conveyor.

Physical TOCDF Impacts

There are no physical impacts to the facility. If this modification request is approved changes to the MPF Programmable Logic Controller (PLC) code and function tests will be required; the function tests ensure the code changes caused the MPF to operate as expected.

3. PERMIT CHANGE PAGES

Change Pages in Permit Body

Module V, page 17

Change Pages in Permit Attachments

None

Changes to Permit Drawings

None

V.C.1.a.vi. The wastes identified in V.C.1.a.ii. shall not be inside the MPF at the same time the wastes identified in V.C.1.a.i. are inside the MPF.

V.C.1.a.vi.1. Conditions V.C.1.a.vi, V.C.2.e, V.C.2.e.i, V.C.2.f, V.C.2.f.i, V.C.2.h, and V.C.2.h.i are not applicable to the associated waste identified in V.C.1.a.ii or V.C.1.a.i only if the waste has completed one treatment cycle through the MPF Primary Combustion Chamber (at the Permit-specified zone and Discharge Airlock times and temperatures), and was returned to Zone 3 of the combustion chamber due to a Discharge Airlock ACAMS alarm.

V.C.1.a.vii Waste identified in Table 2-5 of Attachment 2, Waste Analysis Plan, may be processed for agent that has been successfully demonstrated per condition VI.C.3.a.i.c.1. at the specified operating conditions for munitions/ton containers without further function testing.

V.C.1.a.viii The Permittee shall maintain records that differentiate and document between the Shakedown hours attributed to the processing of waste to be demonstrated during the trial burn/demonstration test and hours attributed to the processing of secondary waste per Condition V.C.1.a.viii.

V.C.1.b. The Permittee shall not incinerate any chemical agent, or any waste containing the chemical agent, for which treatment has not been successfully demonstrated through a trial burn in accordance with Module VI or by other means approved by the Executive Secretary.

V.C.1.c. The Permittee shall not incinerate any hazardous waste in the MPF that contains organic hazardous constituents as described in R315-50-10, that are more difficult to destroy than the material demonstrated in the surrogate trial burn.

V.C.1.d. While processing secondary waste, the feed rate of total halogens to the MPF shall not exceed 1,500* total pounds over a twelve hour rolling average and 97* total pounds per each furnace charge.

V.C.1.d.i While processing mustard munitions or ton containers, the feed rate of total halogens to the MPF shall not exceed 1500* total pounds, over a twelve hour rolling average and 206 total pounds per each furnace charge.

V.C.1.e. The Permittee shall drain liquid from secondary waste. The separated liquid will be categorized and treated as an agent-contaminated sludge per Table V.C.1.

V.C.1.f. The Permittee shall conduct sufficient analysis of the waste treated in the MPF to verify that the waste feed is within the physical and chemical composition limits specified, in accordance with the waste requirements in Attachments 2 (Waste Analysis Plan) and 3 (Sampling, Analytical, and QA/QC Procedures).

V.C.1.g. While processing secondary waste, the feed rate of ash to the MPF shall not exceed 809* total pounds over a twelve-hour rolling average and 70* total pounds per each furnace charge.

4. SUPPORTING INFORMATION

DAL ACAMS Alarms

DAL ACAMS Alarms Since the Beginning of the Mustard Campaign

No.	Station	Time In	Time Out	Tray Contents	D#	Tray No
1	AL_468A	8/21/2006 14:11:02	8/21/2006 14:16:01	Ton Container	45133	184
2	AL_468B	9/7/2006 23:19:33	9/7/2006 23:24:47	Ton Container	33724	105
3	AL_468A	9/12/2006 11:11:10	9/12/2006 11:16:09	Ton Container	75608	184
4	AL_468B	9/14/2006 1:23:46	9/14/2006 1:33:46	Ton Container	94371	178
5	AL_468B	10/17/2006 15:04:37	10/17/2006 15:09:37	Ton Container	50391	185
6	AL_468B	10/22/2006 23:35:05	10/22/2006 23:40:05	Ton Container	47254	168
7	AL_468B	11/2/2006 14:27:27	11/2/2006 14:32:27	Ton Container	94163	183
8	AL_468B	11/4/2006 20:52:44	11/4/2006 21:07:43	Ton Container	10719	171
9	AL_468B	11/27/2006 8:18:47	11/27/2006 8:19:05	Ton Container	18009	128
10	AL_468A	12/4/2006 6:33:47	12/4/2006 7:13:46	Ton Container	48177	172
11	AL_468A	1/1/2007 5:34:32	1/1/2007 6:29:31	Ton Container	94138	172
12	AL_468A	1/2/2007 23:15:23	1/2/2007 23:25:22	Ton Container	17045	172
13	AL_468B	1/7/2007 4:46:18	1/7/2007 4:51:18	Ton Container	47858	188
14	AL_468A	1/7/2007 21:06:10	1/7/2007 21:11:10	Ton Container	22865	187
15	AL_468A	1/13/2007 14:57:39	1/13/2007 15:07:38	Ton Container	92383	105
16	AL_468B	1/14/2007 3:07:33	1/14/2007 3:12:34	Ton Container	18167	168
17	AL_468B	1/14/2007 16:36:06	1/14/2007 16:41:05	Ton Container	48171	128
18	AL_468B	1/27/2007 20:36:18	1/27/2007 20:48:44	Ton Container	18719	171
19	AL_468B	1/29/2007 8:44:59	1/29/2007 8:50:42	Ton Container	47530	196
20	AL_468B	1/31/2007 18:20:36	1/31/2007 18:25:36	Ton Container	1770	168
21	AL_468B	3/14/2007 18:34:20	3/14/2007 18:39:20	Ton Container	14467	188
22	AL_468B	3/15/2007 13:34:17	3/15/2007 13:39:17	Ton Container	53444	174
23	AL_468B	4/10/2007 9:18:37	4/10/2007 9:34:30	Ton Container	16157	144
24	AL_468A	5/2/2007 18:56:22	5/2/2007 19:26:20	Ton Container	21941	186
25	AL_468B	5/2/2007 20:30:34	5/2/2007 20:52:30	Ton Container	21941	186
26	AL_468A	5/3/2007 2:36:19	5/3/2007 2:46:19	Ton Container	8321	192
27	AL_468B	5/31/2007 21:37:46	5/31/2007 21:47:47	Ton Container	48212	183
28	AL_468B	7/1/2007 15:06:34	7/1/2007 16:19:06	Ton Container	22794	179
29	AL_468A	7/4/2007 22:42:53	7/4/2007 22:52:52	Ton Container	24257	161

DAL ACAMS Alarms Since the Beginning of the Mustard Campaign

No.	Station	Time In	Time Out	Tray Contents	D#	Tray No
30	AL_468A	7/6/2007 13:22:52	7/6/2007 13:27:51	Ton Container	43356	185
31	AL_468A	7/9/2007 8:27:43	7/9/2007 8:32:43	Ton Container	94440	168
32	AL_468A	7/14/2007 10:43:40	7/14/2007 10:58:39	Ton Container	50444	142
33	AL_468A	7/16/2007 12:14:56	7/16/2007 12:19:55	Ton Container	53374	188
34	AL_468B	7/16/2007 23:36:54	7/16/2007 23:46:55	Ton Container	55092	145
35	AL_468A	7/17/2007 6:49:46	7/17/2007 6:59:46	Ton Container	54644	185
36	AL_468A	7/17/2007 12:39:58	7/17/2007 12:44:58	Misc. Waste		977
37	AL_468A	7/19/2007 16:09:20	7/19/2007 16:14:21	Misc. Waste		949
38	AL_468A	7/22/2007 23:41:46	7/22/2007 23:46:45	Ton Container	92349	143
39	AL_468A	7/23/2007 7:35:07	7/23/2007 7:50:06	Ton Container	2829	179
40	AL_468B	8/16/2007 10:10:48	8/16/2007 10:18:56	Ton Container	94417	168
41	AL_468B	8/20/2007 2:00:12	8/20/2007 2:20:12	Ton Container	57040	172
42	AL_468A	9/13/2007 12:12:09	9/13/2007 12:17:09	Ton Container	17648	105
43	AL_468B	9/21/2007 12:08:07	9/21/2007 12:18:07	Ton Container	79228	168
44	AL_468B	9/26/2007 0:13:21	9/26/2007 0:22:50	Ton Container	53420	161
45	AL_468A	9/28/2007 8:29:43	9/28/2007 8:34:43	Ton Container	79107	168
46	AL_468A	10/6/2007 7:04:21	10/6/2007 7:09:21	Ton Container	82266	102
47	AL_468B	10/12/2007 17:56:08	10/12/2007 18:01:08	Ton Container	78735	184
48	AL_468A	10/15/2007 6:23:10	10/15/2007 6:28:10	Ton Container	36831	142
49	AL_468A	10/20/2007 2:53:27	10/20/2007 3:03:27	Ton Container	53413	105
50	AL_468A	10/25/2007 19:50:42	10/25/2007 20:00:42	Ton Container	15025	128
51	AL_468B	10/27/2007 22:00:57	10/27/2007 22:10:57	Ton Container	51219	105
52	AL_468A	10/28/2007 7:10:59	10/28/2007 7:15:59	Ton Container	10679	102
53	AL_468A	11/15/2007 18:42:44	11/15/2007 18:47:44	H 155s		639
54	AL_468A	12/29/2007 21:43:21	12/29/2007 21:48:21	H 155s		650
***55**	**AL_468A**	**2/27/2008 8:03:24**	**2/27/2008 8:08:24**	**H 155s**		**635**
56	AL_468B	3/31/2008 12:48:07	3/31/2008 12:54:45	Secondary Waste		863
57	AL_468B	4/7/2008 9:27:11	4/7/2008 9:32:10	Secondary Waste		868

***Bold font denote DAAMS confirmed DAL ACAMS Alarm**